

**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

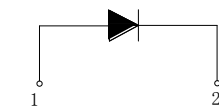
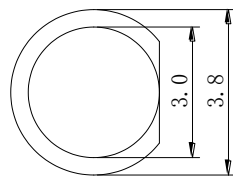
**HL-304S13GD**



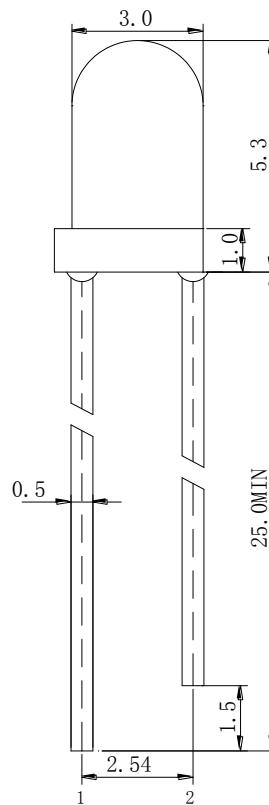
**Features**

- φ 3 LAMP LED
- LOW POWER CONSUMPTION.
- CABINED VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- PACKAGE: 1000PCS / BAG.

**Package Dimensions**



1: ANODE  
2: CATHODE



**Description**

This devices are made with InGaN.

Tolerance Grade	Dimension Tolerance (UNIT:mm)			
		0.5~3	3~6	6~30
	±0.1	±0.2	±0.3	±0.5
Chip		Lens Color		
Material	Emitting Color	Color Diffused		
InGaN	Green			

**■ Absolute Maximum Rating**

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	I <sub>F</sub>	20	mA
Peak Forward Current*	I <sub>FP</sub>	100	mA
Reverse Voltage	V <sub>R</sub>	5	V
Power Dissipation	P <sub>D</sub>	80	mW
Electrostatic discharge	E <sub>SD</sub>	2000	V
Operation Temperature	T <sub>opr</sub>	-30~+80	°C
Storage Temperature	T <sub>stg</sub>	-30~+80	°C
Lead Soldering Temperature*	T <sub>sol</sub>	Max. 260°C for 5sec Max.	

\*I<sub>FP</sub> Conditions: Pulse Width ≤ 10msec

\*T<sub>sol</sub> Conditions: 3mm from the base of the epoxy bulb

**■ Typical Optical/ Electrical Characteristics**      Ta=25°C

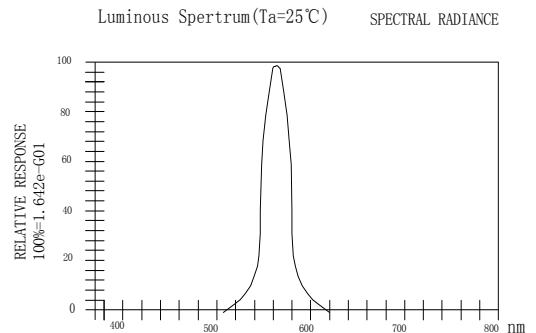
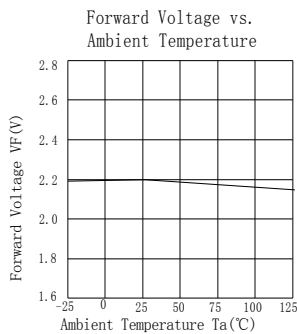
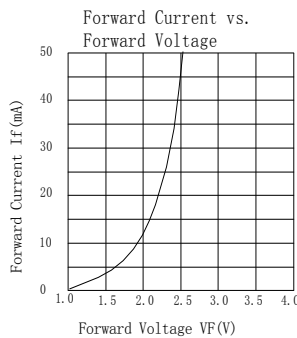
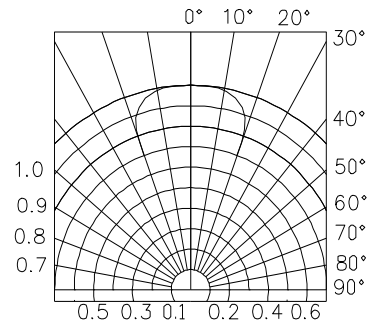
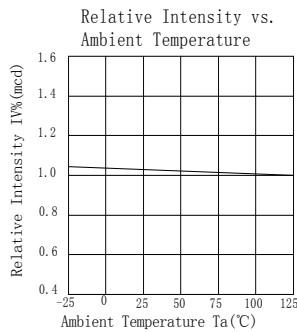
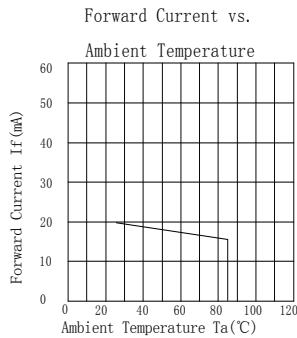
Item	Symbol	Condition	Bank	Min.	Typ.	Max.	Unit
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> =20mA	H	55		70	mcd
			I	70		90	mcd
			J	90		125	mcd
Forward Voltage	V <sub>F</sub>			1.8	2.2	2.6	V
50% Power Angle	2θ 1/2			--	40	--	deg
Prpcp Wavelength	λ <sub>D</sub>			570	--	580	nm
Recommend Forward Current	I <sub>F</sub> (rec)	--		--	--	20	mA
Reverse Current	I <sub>R</sub>	V <sub>r</sub> =5V		--	--	20	uA

Notes:

Tolerance : V<sub>F</sub> ± 0.1V, λ<sub>D</sub> ± 2 nm, I<sub>v</sub>(φ V) ± 15%, 2θ 1/2 ± 15%

**Reliability Performance  
 Test Items And Result**

Test Classification	Test Item	Test Conditions	Test Duration	Sample Size	AC/RE
Life Test	Room Temperature DC Operating Life Test	Ta=25°C±5°C, I <sub>F</sub> =20mA	1000 hrs	22 pcs	0/1
Environment Test	Thermal Shock Test	100°C±5°C 5min ↑ ↓ -40°C±5°C 5min.	100 cycles	22pcs	0/1
	Temperature Cycle Test	100°C±5°C 30min ↑ ↓5min -40°C±5°C 30min.	100 cycles	22 pcs	0/1
	High Temperature & High Humidity Test	85°C ±5°C/85% RH I <sub>F</sub> =5mA	1000 hrs	22 pcs	0/1
	High Temperature Storage	Ta=100°C ±5°C	1000 hrs	22 pcs	0/1
	Low Temperature Storage	Ta=-40°C ±5°C	1000 hrs	22pcs	0/1
Mechanical Test	Resistance to Soldering Heat	Temp=260°C max T=5sec max	1times	22pcs	0/1
	Lead Integrity	Load 2.5N(0.25kgf) 0° ~ 90° ~0°	3times	22pcs	0/1



## Soldering:

### 1. Manual Of Soldering

The temperature of the iron tip should not be higher than 300°C and Soldering within 3 seconds per solder-land is to be observed.

### 2. DIP soldering (Wave Soldering):

Preheating: 120°C~150°C, within 120~180 sec.

Operation heating: 245°C ± 5°C within 5 sec. 260°C (Max)

Gradual Cooling (Avoid quenching).

